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| APPLICATION NO.                 | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---------------------------------|-------------|----------------------|---------------------|------------------|
| 10/622,084                      | 07/16/2003  | Trudo Clarysse       | IMEC281.001AUS      | 1852             |
| 20995                           | 7590        | 07/13/2005           | EXAMINER            |                  |
| KNOBBE MARTENS OLSON & BEAR LLP |             |                      | NGUYEN, SANG H      |                  |
| 2040 MAIN STREET                |             |                      | ART UNIT            |                  |
| FOURTEENTH FLOOR                |             |                      | PAPER NUMBER        |                  |
| IRVINE, CA 92614                |             |                      | 2877                |                  |

DATE MAILED: 07/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/622,084

Applicant(s)

CLARYSSE ET AL.

Examiner

Sang Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 15-25 and 27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10/28/03
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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**DETAILED ACTION*****Election/Restrictions***

Applicant's election with traverse of Specie I (figures 9 is related to Claims 1-14 and 26) in the reply filed on 05/26/05 is acknowledged. The traversal is on the ground(s) that the "the figures show carious embodiments but the figures are not different species of the invention and claims are not necessarily limited to particular figures". This is not found persuasive because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement and the inventions are divergent subject matters and the search for the structures for the reasons given above and have acquired a separate status in the art as shown by their different classification, the election has been treated as an election without traverse (MPEP 818.03 (a)).

The requirement is still deemed proper and is therefore made FINAL.

***Information Disclosure Statement***

The information disclosure statement (IDS) submitted on 10/28/03 has been entered. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

***Claim Rejections - 35 USC § 102***

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claim 1-3, 6, 11-14 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Borden (U.S. Patent No. 5,966,019).**

**Regarding claims 1 and 26;** Borden discloses an apparatus and a method for measuring a value of a bulk property of a semiconductor substrate, comprising:

means for (174 of figure 8) providing a generation beam (206 of figure 8);  
means for (172 of figure 8) providing an analyzer beam (196 of figure 8);  
means for (178 of figure 8) focusing the generation beam (206 of figure 8) and the analyzer beam (196 of figure 8) on the semiconductor substrate (21 of figure 6), wherein the generation beam (206 of figure 8) of the generation beam system (174 of figure 8) for generating in an area (22, 24 of figure 2) of the semiconductor substrate (21 of figures 2 and 8) contacted by the generation beam a number of excess charge carriers or electrons (col.4 lines 10-67 and col.6 lines 50-67 and col.8 lines 25-65), having a depth profile (col.8 line 61 and col.13 lines 8-12), the generated excess charge carriers reflecting the analyzer beam (figures 7-8);

means for (176 of figure 8) detecting a predetermined characteristic of the reflected analyzer beam (196 of figure 8; col.13 lines 1-15 and col.14 lines 3-20),

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the predetermined characteristic (abstract and claim 1) comprising a near-surface contribution (col.14 lines 45-48) relating to a polarizer or analyzer component of the analyzer beam (114 of figure 6 and 196 of figure 8) reflected near the surface of the semiconductor substrate (21 of figure 6 and 9); and

means for (254 of figure 9) determining the value of the bulk property from the predetermined characteristic of the reflected analyzer beam(252 of figure 9), the bulk property relating to a component (col.14 lines 45-48) of the analyzer beam (114 of figure 6 and 196 of figure 8) reflected in an excess carrier profile region away from the surface of the semiconductor substrate (21 of figure 8 and col.14 line 42 to col.16 line 7), wherein at least the near-surface contribution is eliminated or filtering out from the predetermined characteristic by a filter (222 of figure 8 and 148 of figure 6) . see figures 1-13.

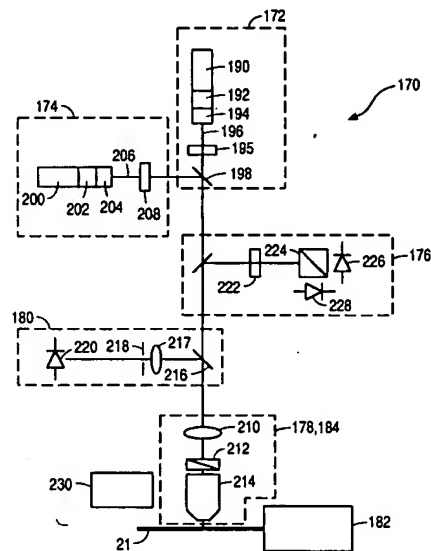


FIG. 8

**Regarding claim 2;** Borden teaches about focusing another analyzer beam considered to be a reference beam from analyzer beam generator (172 of figures 7-8) on the area of the semiconductor substrate (21 of figures 7-8) wherein the generated excess charge carriers reflect the another analyzer beam (figures 7-8), and detecting a predetermined characteristic of the reflected another analyzer beam by detector (176 of figures 7-8) , wherein the eliminating of the filter (222 of figure 8) comprises combining the reflected analyzer beam and the reflected another analyzer beam (figures 7-8)..

**Regarding claim 3;** Borden teaches of the polarization analyzer beam and the another polarization analyzer (reference) beam have a different wavelength (col.10 lines 60-65).

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**Regarding claim 6;** Borden discloses all of features of claimed invention as indicate that splitters (198 of figure 8) splitting the analyzer beam into a reference beam (55 of figures 2 and 7) having the same wavelength as that of the analyzer beam; a polarization beam splitter (224 of figure 8) for creating a difference in phase of about one-eighth and combining the reference beam and the reflected analyzer beam(col.14 lines 5-14).

**Regarding claim 11;** Borden discloses that wherein the generation beam and the analyzer beam are focused on substantially the same area of the semiconductor substrate.

**Regarding claims 12-14;** Borden teaches the predetermined characteristic of the reflected analyzer beam is the power, the amplitude and the phase of the beam (col.7 lines 6-13 and col.9 lines 63-67).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claim 4-5 and 7-8 and rejected under 35 U.S.C. 103(a) as being unpatentable over Borden (U.S. Patent No. 5,966,019) in view of Finarov (U.S. Patent No. 5,333,552).**

**Regarding claim 4-5 and 7-8;** Borden discloses all of features of claimed invention except for the analyzer beam and the another analyzer beam have a different angle of incidence and the combining the reflected analyzer beam and the reflected another analyzer beam comprises selecting either the s-wave or p-wave component of the reflected signals, the p-wave and s-wave being parallel and perpendicular components to the incident plane of the analyzer beam, respectively. However, Fanarov teaches that it is known in the art to provide the analyzer beam and the another analyzer beam have a different angle of incidence (figure 4) and the combining the reflected analyzer beam and the reflected another analyzer beam comprises selecting either the s-wave or p-wave component of the reflected signals, the p-wave and s-wave being parallel and perpendicular components to the incident plane of the analyzer beam (col.3 lines 30-53). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine an apparatus and a method for measuring a value of a bulk property of a semiconductor substrate of Borden with the analyzer beam and the another analyzer beam have a different angle of incidence and the combining the reflected analyzer beam and the reflected another analyzer beam comprises selecting either the s-wave or p-wave component of the reflected signals, the p-wave and s-wave being parallel and perpendicular components to the incident plane of the analyzer beam as taught by Finarov for the purpose of measuring differences in the reflectivity two or more sample materials with high contrast in the image of sample materials.



**Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Borden (U.S. Patent No. 5,966,019) in view of Borden et al (U.S. Patent No. 6,323,951).**

**Regarding claims 9-10;** Borden ('019) discloses that the bulk property is the distribution of dopants introduced and defect distribution of the defects present in the semiconductor substrate. However, Borden et al ('951) discloses that it is known in the art to provide the bulk property is the distribution of dopants (abstract) introduced and defect distribution of the defects present (col.17 lines 33-40) in the semiconductor substrate. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine an apparatus and a method for measuring a value of a bulk property of a semiconductor substrate of Borden with the bulk property is the distribution of dopants introduced and defect distribution of the defects present in the semiconductor substrate as taught by Borden et al ('951) for the purpose of measuring defects and dopants on the substrate.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Li et al (6392756) discloses method and apparatus for optically determining physical parameters of thin film; Borden et al (6049220) discloses apparatus and method for evaluating a wafer of semiconductor; or Opsal et al (5042952) discloses method and apparatus for evaluating surface and subsurface.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Nguyen whose telephone number is (571) 272-2425. The examiner can normally be reached on 9:30 am to 7:00 pm.

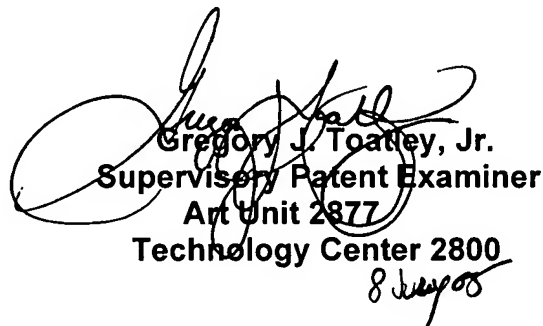
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sang Nguyen/SN

July 6, 2005



Gregory J. Toatley, Jr.  
Supervisory Patent Examiner  
Art Unit 2877  
Technology Center 2800  
8 July 05